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10/695,992	10/30/2003	Kunihiko Takao	500.43232X00	5669

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EXAMINER

HAMO, PATRICK

ART UNIT	PAPER NUMBER
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3746

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/22/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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Part of Paper No./Mail Date 20070106

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed October 30, 2003 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because it fails to identify the application number and the publication date of the reference. It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609.05(a).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 2-3 and 5-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In lines 2-3 of each of claims 2, 3, 5, and 6, it is unclear if "first cylinder" refers to the "cylinder" previously positively recited in the independent claims, thereby carrying all the structural limitations presented in the independent claims as well, or is meant as a

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positive recitation of another cylinder. For the purposes of examination, "a first cylinder" is assumed to be a new positively recited cylinder and does not include the structural limitations of the cylinder of claims 1 and 4.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Bez, 5,482,443.

Bez discloses a pump including a pump cylinder 53 having an inner wall surface 70 and a piston 42 reciprocating in the cylinder, the piston being formed on its outer surface with a stepped part 74 along the driving direction of the piston so as to define a working chamber having a cross-sectional area between the stepped part 74 and the inner wall surface 70 of the cylinder (stage 3, fig. 4), and the end part of the piston 42 on the side remote from the drive side exposed to a gas atmosphere (col. 4, ll. 60-67). It is inherent that its cross-sectional area and the driving speed of the piston determine the flow rate out of this working chamber. The pump includes another pump cylinder 51 with a piston 72 reciprocating in it, a suction valve 100 upstream of this pump cylinder, and a discharge valve 55 downstream of it. Pump cylinder 53 is located farthest downstream of three pumps provided. The working chamber of pump cylinder 53 is connected to a discharge passage 142 out of the pumping assembly and the working chamber of pump

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cylinder 51 is connected to an intake or suction passage 92, and pump cylinders 51 and 53 are connected in series (stages 1 and 3, fig. 10).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugiyama et al., 6,122,049 in view of Bez, 5,482,443, and further in view of Gerhardt et al., 6,712,587.

Sugiyama teaches a liquid chromatographic apparatus including a reservoir 10, 12, 62, a low pressure pump 20, 22 provided between the reservoir and a pump 34 for providing eluent to a column 42, a switch valve 38, a passage communicating the switch valve 38 to the column 42 and a passage communicating to reservoir 62 (fig. 1), the switch valve changing over communication between the two passages.

However, Sugiyama does not teach the following taught by Bez: a pump including a pump cylinder 53 having an inner wall surface 70 and a piston 42 reciprocating in the cylinder, the piston being formed on its outer surface with a stepped part 74 along the driving direction of the piston so as to define a working chamber having a cross-sectional area between the stepped part 74 and the inner wall surface 70 of the cylinder (stage 3, fig. 4), and the end part of the piston 42 on the side remote from the drive side exposed to a gas atmosphere (col. 4, ll. 60-67). The pump includes

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another pump cylinder 51 with a piston 72 reciprocating in it, a suction valve 100 upstream of this pump cylinder, and a discharge valve 55 downstream of it. Pump cylinder 53 is located farthest downstream of three pumps provided. The working chamber of pump cylinder 53 is connected to a discharge passage 142 out of the pumping assembly and the working chamber of pump cylinder 51 is connected to an intake or suction passage 92, and pump cylinders 51 and 53 are connected in series (stages 1 and 3, fig. 10), and sealed to prevent leakage of atmospheric pressure air into the working parts of the pump (col. 2, ll. 44-56).

Furthermore, neither Sugiyama nor Bez teach the following taught by Gerhardt: a pump for liquid chromatography wherein a liquid flow rate is in the $\mu\text{L}/\text{min}$ range, particularly 1 $\mu\text{L}/\text{min}$ or less (col. 1, ll. 57-60) that is reliable and uses off-the-shelf technology (col. 2, ll. 4-12).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to have modified Sugiyama with Bez and Gerhardt in order to prevent leakage of atmospheric pressure air into the working parts of the pump (Bez, col. 2, ll. 44-56) and make it more reliable and use off-the-shelf technology (Gerhardt, col. 2, ll. 4-12).

Furthermore, the claimed ranges of 0.1 nL/min to 50 $\mu\text{L}/\text{min}$ overlaps the range taught by Gerhardt and therefore fails to patentably distinguish over the prior art. See MPEP §2144.05(1).

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Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Hamo whose telephone number is 571-272-3492. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ehud Gartenberg can be reached on 571-272-4828. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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TC 3246